

Appendix B: Analysis of SF₆ Concentration Data for Test 1

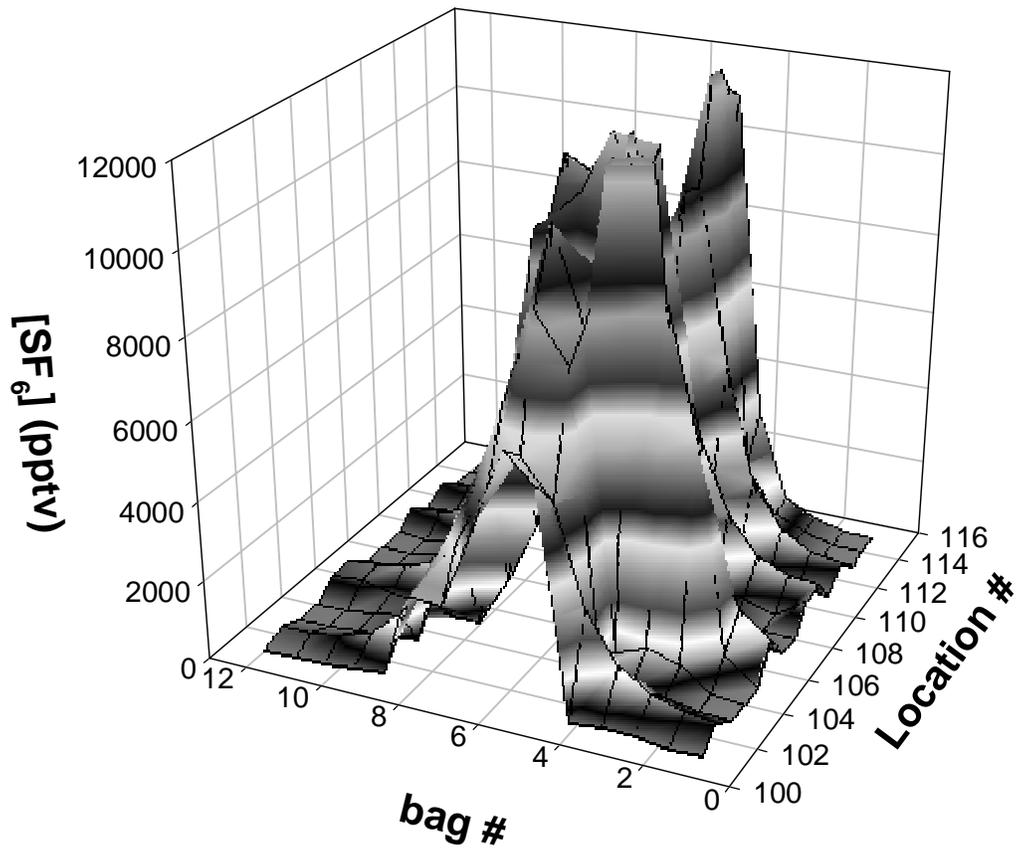


Figure B1. Whole air sampler data for Test 1, Line 1.

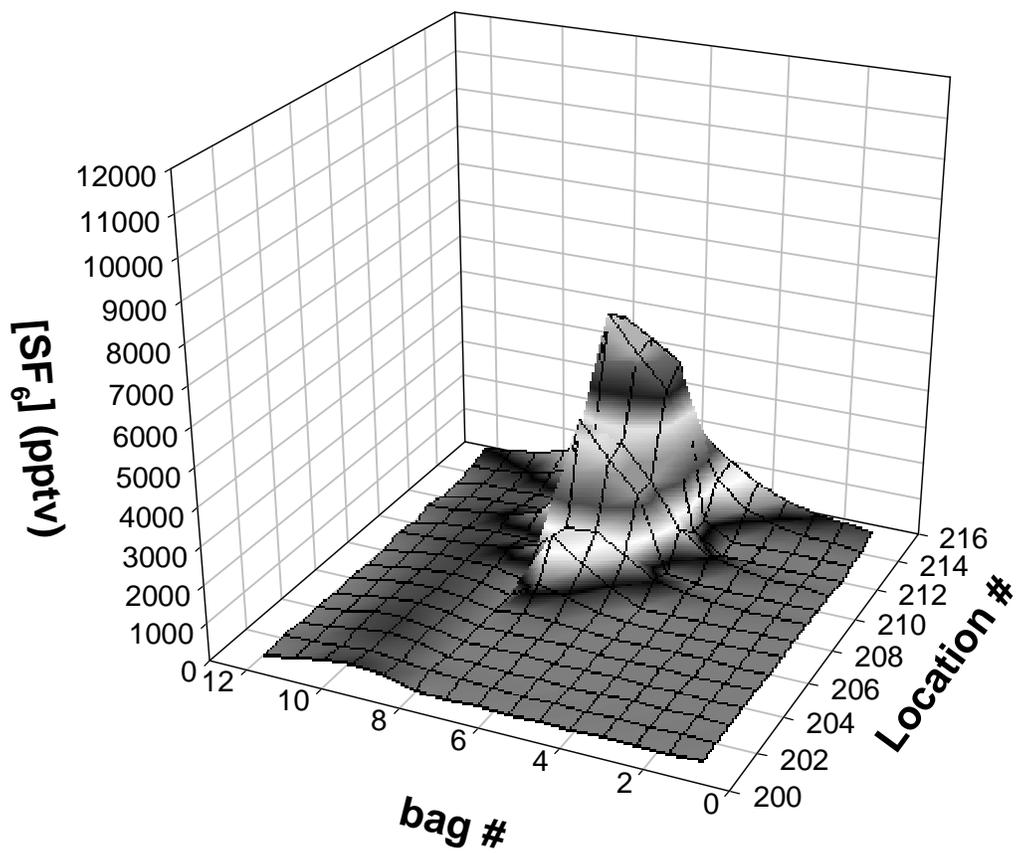


Figure B2. Whole air sampler data for Test 1, Line 2.

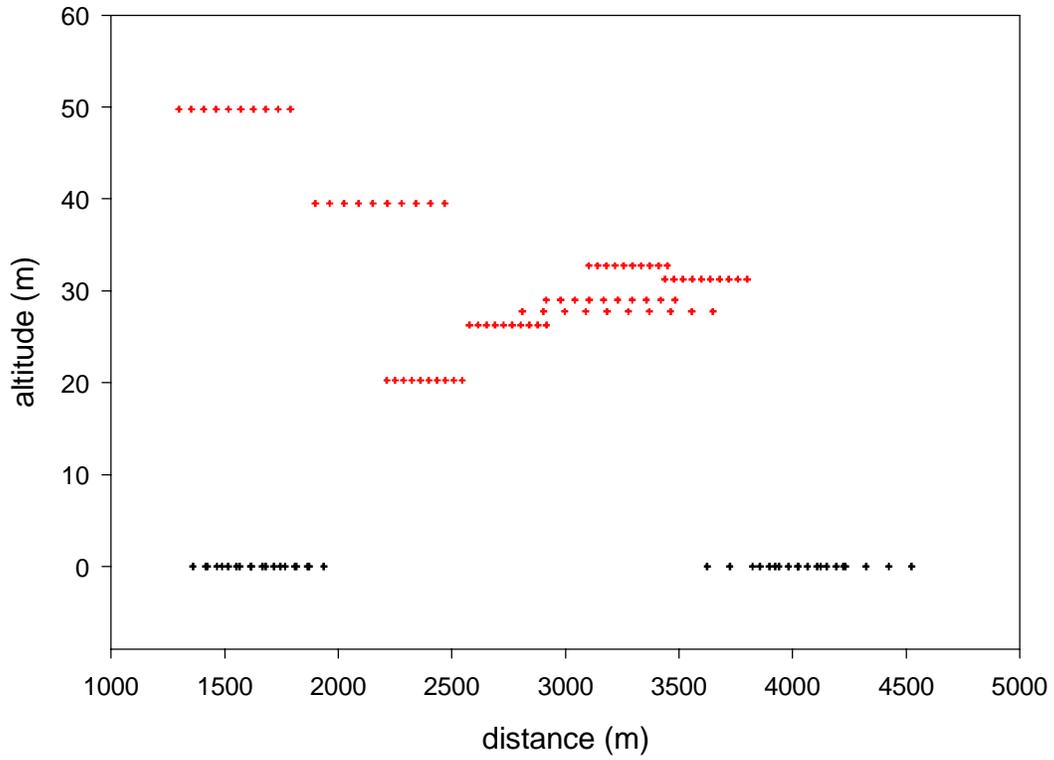


Figure B3. Test 1 continuous analyzer data. Altitude versus downwind distance. The red crosses are aircraft measurements. The black crosses are ground measurements at sampling Lines 1 and 2. The width is $\pm 1\sigma$ from the position of peak concentration.

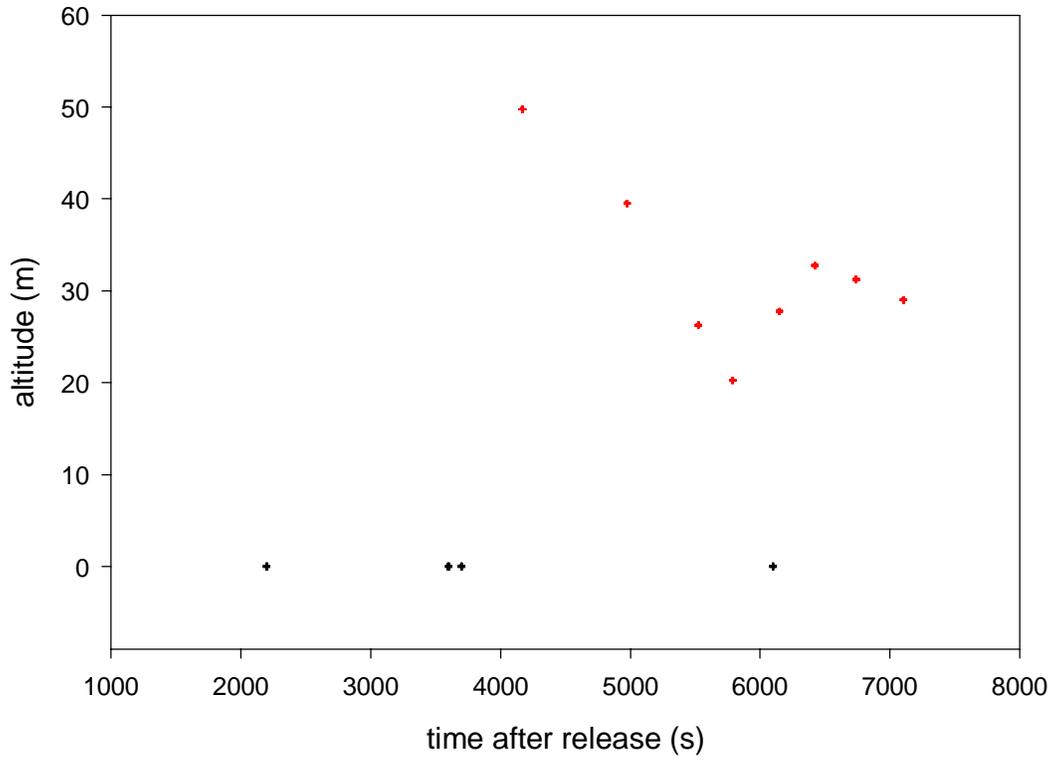


Figure B4. Test 1 continuous analyzer data. Altitude versus time after release. The red crosses are aircraft measurements. The black crosses are ground measurements at sampling Lines 1 and 2.

Table B1. Test 1 sampling line SF₆ concentration variability.

ID	WS (m s ⁻¹)	σ_{ws} (m s ⁻¹)	θ (deg)	σ_{θ} (deg)	mrsd	σ_{mrsd}	N
Line 100	0.8	0.4	168	44	1.1	1.0	12
Line 200	0.9	0.6	181	47	0.8	0.7	12
Line 300							
All					0.9	0.8	24
0 - 100 pptv					0.8	0.8	10
100 - 500 pptv					0.8	0.9	5
> 500 pptv					1.1	0.9	9

Table B2. Test 1 sampling line SF₆ concentration variability by line for each sampling bag.

Line 100				Line 200				Line 300			
Bag	Mean SF ₆ (pptv)	σ_{SF_6} (pptv)	rsd	Bag	Mean SF ₆ (pptv)	σ_{SF_6} (pptv)	rsd	Bag	Mean SF ₆ (pptv)	σ_{SF_6} (pptv)	rsd
1	14	24	1.7	1	5	4	0.8	1			
2	78	195	2.5	2	3	0	0.1	2			
3	846	2740	3.2	3	4	2	0.5	3			
4	2887	4570	1.6	4	4	0	0.1	4			
5	9960	1980	0.2	5	120	210	1.8	5			
6	6980	3700	0.5	6	1250	2050	1.6	6			
7	6255	3370	0.5	7	1920	2680	1.4	7			
8	3888	1830	0.5	8	228	413	1.8	8			
9	696	445	0.6	9	194	31	0.2	9			
10	65	44	0.7	10	283	55	0.2	10			
11	27	9	0.3	11	132	40	0.3	11			
12	48	28	0.6	12	8	4	0.4	12			

Table B3. Test 1 SF₆ transport parameters from ground-based continuous analyzers.

	Location					
	101	115	201	215	301	315
WS (m s ⁻¹)	0.8		0.9			
σ_{ws} (m s ⁻¹)	0.4		0.6			
θ (deg)	168		181			
σ_{θ} (deg)	44		47			
V _{SF6} (m s ⁻¹)	0.8	0.5	0.9	1.5		
Error Limit V _{SF6} (m s ⁻¹)	0.1	0.1	0.03	0.7		
σ_x (m)	500	640	420	1000		
Error Limit σ_x (m)	240	150	220	500		
SF ₆ Transport Time (s)	2200	3700	6100	3600		
Error Limit SF ₆ Transport Time (s)	270	640	180	1800		
SF ₆ Peak (pptv)	12000	6700	340	6800		
Error Limit SF ₆ Peak (pptv)	7100	1200	160	1050		

Table B4. Test 1 SF₆ transport parameters from aircraft continuous analyzer.

	Pass							
	1	2	3	4	5	6	7	8
SF ₆ Speed (m s ⁻¹)	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.4
Error SF ₆ Speed (m s ⁻¹)	0.10	0.06	0.02	0.01	0.02	0.01	0.02	0.00
σ_x (m)	550	630	380	370	930	380	400	630
Error σ_x (m)	680	670	100	110	830	70	70	90
Peak Detection Time (s)	4170	4980	5530	5790	6150	6420	6740	7100
Error Peak Detection Time (s)	19	19	18	18	18	18	18	18
Peak Concentration (pptv)	70	1680	1940	2530	1160	1820	1020	150
Error Peak Concentration (pptv)	40	1820	420	710	560	270	170	15
Altitude (m)	50	40	30	20	30	30	30	30
Downwind Distance (m)	1500	2200	2700	2400	3200	3300	3600	3200
Error Downwind Distance (m)	500	300	100	100	200	100	200	200